APPENDIX B

Updated: 1/29/2015

RVSM MINIMUM MONITORING REQUIREMENTS TABLES

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Basic Instructions

The RVSM Minimum Monitoring Requirement (MMR) Tables (or MMR chart for short) are maintained by the ICAO Regional Monitoring Agency Coordination Group (RMACG) and reflect the current aircraft group and category listings that RVSM capable aircraft types are assigned too. These tables can be used to determine the minimum number of aircraft that an operator must have monitored.

NOTE: These tables change from time to time reflecting current performance of the aircraft group and should be consulted prior to determining the number of aircraft necessary to be monitored.

1. The following instructions will assist operators on how to use the tables in this Appendix to determine the RVSM monitoring group and category for a given fleet of aircraft.

2. Aircraft groups. Aircraft of nominally identical design and build with respect to all details that could influence the accuracy of height-keeping performance are grouped together.

RVSM Group example from MMR Table 2: All Gulfstream 400 and 350 series aircraft are grouped into the "GLF4" group for monitoring purposes.

Monitoring Group	A/C ICAO	A/C Type	A/C Series
GLF4	GLF4	GULFSTREAM IV (G-1159C) G300 G350 G400 G450	ALL SERIES

3. Aircraft Categories. Aircraft groups are organized according to their compliance with the RVSM Minimum Aircraft System Performance Specifications (MASPS). Aircraft groups are further organized into three categories. (RVSM MMR Table 1):

a. Category 1: Group approved data indicates compliance with RVSM MASPS.

b. Category 2: Group approved aircraft that there is insufficient data to indicate compliance with RVSM MASPS.

c. Category 3: Non-group approved aircraft.

4. Each Category of aircraft has different minimum monitoring requirements.

a. Group aircraft that fall into Category 1 require a minimum of **two airframes** from each fleet of an operator to be monitored.

b. Group aircraft that fall into Category 2 require that **60% of airframes** (round up if fractional) from each fleet of an operator be monitored. If an operator only has two airframes of the same group both airframes must be monitored.

c. Category 3, Non-group aircraft, 100% of an aircraft shall be monitored.

RVSM Category example from MMR Table 1: A G350 is in monitoring group GLF4. GLF4 is a **Category 1** aircraft. The operator of this aircraft must have **two airframes** from the total number of their GLF4 fleet monitored.

CATEGORY	AIRCRAFT GROUP	MINIMUM OPERATOR MONITORING FOR EACH AIRCRAFT GROUP	MINIMUM OPERATOR MONITORING FOR EACH AIRCRAFT GROUP
1	GROUP APPROVED: DATA INDICATES COMPLIANCE WITH THE RVSM MASPS	A124, A300, A306, A310-GE, A310-PW, A318, A320, A330, A340, A345, A346, A3ST, AVRO, B712, B727, B737CL, B737C, B737NX, B747CL, B74S, B744-5, B744-10, B752, B753, B767, B764, B772, B773, BD100, CL600, CL604, CL605, C17, C525, C560, C56X, C650, C680, C750, CARJ, CRJ7, CRJ9, DC10, E135-145, E170-190, F100, F900, FA10, GALX, GLEX, **GLF4**, GLF5, H25B-800, J328, KC135, LJ40, LJ45, LJ60, MD10, MD11, MD80, MD90, PRM1, T154	**Two airframes from each fleet of an operator to be monitored**

5. In summary to determine the number of aircraft an operator must have monitored:

   a. Determine the aircraft "Group" that each of an operator's type and series of aircraft belongs from Table 2 of the RVSM MMR Tables; and

   b. Determine the "Category" for each aircraft group from Table 1 of the RVSM MMR Tables; and

   c. The number of airframes an operator has for each "Group" will provide the basis for the minimum number of airframes to be monitored from Categories in Table 1 of the RVSM MMR Chart. Using the "Category" multiply the minimum number required (from column 4 of Table 1) x the number of aircraft in each "Group" (round up if fractional).

   d. Example. An operator has five (5) G-550's. Since the G-550 belongs to the GLF5 monitoring group and that aircraft group is in Category 1, only two airframes from this operator's fleet need to be monitored.

      If the operator also has three (3) C-550s, since the Citations (C550 Group) is in Category 2, 60% of these airframes must be monitored, (3 x .60 = 1.8) rounding up the operator would also have to have two of these airframes monitored.

RVSM MINIMUM MONITORING REQUIREMENTS TABLES:

As of: 31 December 2014

1. UPDATE OF MONITORING REQUIREMENTS TABLE AND WEBSITE. As significant data is obtained, monitoring requirements for specific aircraft types may change. When Table 1 below, is updated, a letter will be distributed by the Regional Monitoring Agencies (RMAs) to the States concerned. The updated table will be posted on the RMA secure website being maintained by the International Civil Aviation Organization (ICAO) and replicated in each specific RMA website.

2. MONITORING PROGRAM. All operators that operate or intend to operate in airspace where RVSM is applied are required to participate in the regional RVSM monitoring program. Table 1 addresses

requirements for monitoring the height-keeping performance of aircraft in order to meet regional safety objectives. In their application to the appropriate State authority for RVSM approval, operators must show a plan for meeting the applicable monitoring requirements. Initial monitoring should be completed as soon as possible but not later than 6 months after the issue of RVSM approval and thereafter as directed by the regional RVSM monitoring program.

3. AIRCRAFT STATUS FOR MONITORING. Aircraft engineering work that is required for the aircraft to receive RVSM airworthiness approval must be completed prior to the aircraft being monitored. Any exception to this rule will be coordinated with the State authority.

4. APPLICABILITY OF MONITORING FROM OTHER REGIONS. Monitoring data obtained in conjunction with RVSM monitoring programs from other regions can be used to meet regional monitoring requirements. The RMAs, which are responsible for administering the monitoring program, have access to monitoring data from other regions and will coordinate with States and operators to inform them on the status of individual operator monitoring requirements.

5. MONITORING PRIOR TO THE ISSUE OF RVSM OPERATIONAL APPROVAL IS NOT A REQUIREMENT. Operators should submit monitoring plans to the responsible civil aviation authority and the RMA that show how they intend to meet the requirements specified in Table1. Monitoring will be carried out in accordance with this table.

6. AIRCRAFT GROUPS NOT LISTED IN TABLE 1. Contact the RMA for clarification if an aircraft group is not listed in Table 1 or for clarification of other monitoring related issues. An aircraft group not listed in Table 1 will probably be subject to Category 2 or Category 3 monitoring requirements.

7. TABLE OF MONITORING GROUPS. Table 2 shows the aircraft types and series that are grouped together for operator monitoring purposes.

8. TRAILING CONE DATA. Altimetry System Error estimations developed using Trailing Cone data collected during RVSM certification flights can be used to fulfill monitoring requirements. It must be documented, however, that aircraft RVSM systems were in the approved RVSM configuration for the flight.

9. MONITORING OF AIRFRAMES THAT ARE RVSM COMPLIANT ON DELIVERY. If an operator adds new RVSM compliant airframes of a type for which it already has RVSM operational approval and has completed monitoring requirements for the type in accordance with the attached table, the new airframes are not required to be monitored. If an operator adds new RVSM compliant airframes of an aircraft type for which it has NOT previously received RVSM operational approval, then the operator should complete monitoring in accordance with the attached table.

Table 1: MONITORING REQUIREMENTS TABLE (Civilian)

MONITORING IS REQUIRED IN ACCORDANCE WITH THIS TABLE

MONITORING PRIOR TO THE ISSUE OF RVSM APPROVAL IS **NOT** A REQUIREMENT

CATEGORY		MONITORING GROUP	MINIMUM OPERATOR MONITORING FOR EACH MONITORING GROUP
1	GROUP APPROVED: DATA INDICATES COMPLIANCE WITH THE RVSM MASPS	A124, A300, A306, A310-GE, A310-PW, A318, A320, A330, A340, A345, A346, A380, A3ST, AVRO, B712, B727, B737C, B737CL, B737NX, B747CL, B74S, B744-5, B744-10, B752, B753, B764, B767, B772, B773, BD100, BE40, C25A, C25B, C510, C525, C560, C56X, C650, C680, C750, CARJ, CL600, CL604, CL605, CRJ7, CRJ9, DC10, E135-145, E170-190, E50P, E55P, F100, F900, FA7X, GALX, GLEX, GLF4, GLF5, H25B-800, J328, LJ40, LJ45, LJ60, MD10, MD11, MD80, MD90, PRM1, T154	Two airframes from each fleet of an operator to be monitored
2	GROUP APPROVED: INSUFFICIENT DATA ON APPROVED AIRCRAFT	Other group aircraft other than those listed above including: A148, A158, A350, AC90, AC95, AJ27, AN72, ASTR, ASTR-SPX, B701, B703, B731, B732, B744-LCF, B748, B787, BCS1, BD700, BE20, BE30, C25C, C441, C500, C550-B, C550-II, C550-SII, CRJ10, D328, DC85, DC86-87, DC91, DC93, DC94 DC95, E120, E45X, EA50, F2TH, F70, FA10, FA20, FA50, G150, G280, GLF2, GLF2B, GLF3, GLF6, H25B-700, H25B-750, H25C, HA4T, HDJT, IL62, IL76, IL86, IL96, L101, L29B-2, L29B-731, LJ23, LJ24, LJ25, LJ28, LJ31, LJ35-36, LJ55, MU30, P180, PAY4, PC12, SB20, SBR1, SBR2, SU95, T134, T204, T334, TBM, WW24, YK42	60% of airframes (round up if fractional) from each fleet of an operator **or** individual monitoring
3	Non-Group	Aircraft types for which no generic compliance method exists: A225, AN12, AN26, B190, B462, B463, B720, B74S-SOFIA, BA11, BE9L, GSPN, H25A, L29A, PAY3, R721, R722, SJ30, STAR	100% of aircraft shall be monitored

Table 2: MONITORING GROUPS FOR AIRCRAFT CERTIFIED UNDER GROUP APPROVAL REQUIREMENTS

Monitoring Group	A/C ICAO	Manufacturer Type	Additional Defining Criteria
A124	A124	AN-124 RUSLAN	
A148	A148	AN-148	
A158	A158	AN-158	
A225	A225	ANTONOV AN-225	Non-Group
A30B	A30B	A300	
A306	A306	A300	
A310-GE	A310	A310	Series: 200, 200F, 300, 300F
A310-PW	A310	A310	Series: 220, 220F, 320
A318	A318	A318	
A320	A319 A320 A321	A319 A320 A321	
A330	A332 A333	A330 A330	
A340	A342 A343	A340 A340	
A345	A345	A340	
A346	A346	A340	
A350	A359	AIRBUS 350-900	
A380	A388	A380	
A3ST	A3ST	A300	
AC90	AC90	COMMANDER 690 COMMANDER 840 COMMANDER 900	
AC95	AC95	AERO COMMANDER 695	
AJ27	AJ27	COMAC ARJ-21-700	
AN12	AN12	ANTONOV AN-12	Non-Group
AN26	AN26	ANTONOV AN-26	Non-Group
AN72	AN72	ANTONOV AN-72 ANTONOV AN-74	
ASTR	ASTR	1125 ASTRA	S/n 1-78, except 73
ASTR-SPX	ASTR	1125 ASTR SPX, G100	S/n 73, 79-145 S/n > 146
AVRO	RJ1H RJ70 RJ85	RJ100 Avroliner RJ70 Avroliner RJ85 Avroliner	
B190	B190	BEECH 1900	Non-Group

Monitoring Group	A/C ICAO	Manufacturer Type	Additional Defining Criteria
B462	B462	BAe-146-200	Non-Group
B463	B463	BAe-146-300	Non-Group
B701	B701	B707	
B703	B703	B707	Series 320, 320B, 320C
B712	B712	B717	
B720	B720	B720	Non-Group
B727	B721	B727	
	B722	B727	
B731	B731	B737	
B732	B732	B737	
B737CL	B733	B737-300	
	B734	B737-400	
	B735	B737-500	
B737NX	B736	B737-600	
	B737	B737-700	Series: 700, BBJ only
	B738	B737-800	
	B739	B737-900	
B737C	B737	B737-700	Series: 700C
B747CL	B741	B747-100	
	B742	B747-200	
	B743	B747-300	
B74S	B74S	B747SP	
	B74R	B747SR	
B74S-SOFIA	B74S	NASA B74SP with Sofia telescope	Non-Group: N747NA (s/n 21441)
B744-5	B744	B747-400	5 inch Probes up to SN 25350
	B74D		
B744-10	B744	B747-400	10 inch Probes from SN 25351
	B74D		
B744-LCF	BLCF	B747-400	
B748	B748	B747-800	
B752	B752	B757-200	
B753	B753	B757-300	
B767	B762	B767-200	
	B763	B767-300	
B764	B764	B767-400	
B772	B772	B777-200	
	B77L	B777-F	

Monitoring Group	A/C ICAO	Manufacturer Type	Additional Defining Criteria
	B77L	B777-200LR	
B773	B773	B777-300	
	B77W	B777-300ER	
B787	B788	B787-8	
	B789	B787-9	
BA11	BA11	BAC-111	Non-Group
BCS1	BCS1	BOMBARDIER 500 C SERIES CS100	
BD100	CL30	CHALLENGER 300	
BD700	GL5T	GLOBAL 5000	
BE9L			Non-Group
BE20	BE20	200 KINGAIR	
BE30	BE30	B300 SUPER KINGAIR	
	B350	B300 SUPER KINGAIR 350	
BE40	BE40	BEECHJET 400	
		BEECHJET 400A	
		BEECHJET 400XP	
		HAWKER 400XP	
C441	C441	CONQUEST II	
C500	C500	500 CITATION	
	C500	500 CITATION I	
	C501	501 CITATION I SINGLE PILOT	
C510	C510	MUSTANG	
C525	C525	525 CITATIONJET	
		525 CITATIONJET 1	
		525 CITATIONJET PLUS	
C25A	C25A	525A CITATIONJET II	
C25B	C25B	CITATIONJET III	
		525B CITATIONJET III	
C25C	C25C	525C CITATIONJET IV	
C550-B	C550	550 CITATION BRAVO	
C550-II	C550	550 CITATION II	
		551 CITATION II SINGLE PILOT	
C550-SII	C550	S550 CITATION SUPER II	
C560	C560	560 CITATION V	
		560 CITATION V ULTRA	
		560 CITATION V ENCORE	
C56X	C56X	560 CITATION EXCEL	
		560 CITATION XLS	
C650	C650	650 CITATION III	

Monitoring Group	A/C ICAO	Manufacturer Type	Additional Defining Criteria
		650 CITATION VI 650 CITATION VII	
C680	C680	680 CITATION SOVEREIGN	
C750	C750	750 CITATION X	
CARJ	CRJ1 CRJ2 CRJ2 CRJ2	CRJ-100 CRJ-200 CHALLENGER 800 CHALLENGER 850	
CRJ7	CRJ7	CRJ-700	
CRJ9	CRJ9	CRJ-900	
CRJ10	CRJX	CRJ-1000	
CL600	CL60	CL-600 CL-601	S/n < 500
CL604	CL60	CL-604	5000 < S/n < 5700
CL605	CL60	CL-605	S/n > 5700
DC10	DC10	DC-10	
D328	D328	328 TURBOPROP	
DC85	DC85	DC-8	
DC86-87	DC86 DC87	DC-8 DC-8	
DC91	DC91	DC-9	
DC93	DC93	DC-9	
DC94	DC94	DC-9	
DC95	DC95	DC-9	
E120	E120	EMB-120 Brasilia	
E135-145	E135 E145	EMB-135 EMB-145	
E45X	E45X	EMB-145 XR	
E170-190	E170 E170 E190 E190	EMB-170 EMB-175 EMB-190 EMB-195	
E50P	E50P	PHENOM 100	
E55P	E55P	PHENOM 300	
EA50	EA50	ECLIPSE	
F100	F100	FOKKER 100	
F2TH	F2TH	FALCON 2000 FALCON 2000-EX FALSON 2000LX	

Monitoring Group	A/C ICAO	Manufacturer Type	Additional Defining Criteria
F70	F70	FOKKER 70	
F900	F900	FALCON 900 FALCON 900DX FALCON 900EX FALCON 900LX	
FA10	FA10	FALCON 10	
FA20	FA20	FALCON 20 FALCON 200	
FA50	FA50	FALCON 50 FALCON 50EX	
FA7X	FA7X	FALCON 7X	
G150	G150	G150	
G280	G250 G280	G250 G280	
GALX	GALX	1126 GALAXY G200	
GLEX	GLEX	BD-700 GLOBAL EXPRESS	
GLF2	GLF2	GULFSTREAM II (G-1159)	
GLF2B	GLF2	GULFSTREAM IIB (G-1159B)	
GLF3	GLF3	GULFSTREAM III (G-1159A)	
GLF4	GLF4	GULFSTREAM IV (G-1159C) G300 G350 G400 G450	
GLF5	GLF5	GULFSTREAM V (G-1159D) G500 G550	
GLF6	GLF6	G650	
GSPN	GSPN	GROB G-180 SPn Utility Jet	Non-Group
H25A	H25A	HS125-400, -600	Non-Group
H25B-700	H25B	BAE 125 / HS125	Series: 700A, 700B
H25B-750	H25B	HAWKER 750	
H25B-800	H25B	BAE 125 / HS125	Series: 800A, 800
		HAWKER 800XP HAWKER 800XPI HAWKER 800 HAWKER 850XP HAWKER 900XP	

Monitoring Group	A/C ICAO	Manufacturer Type	Additional Defining Criteria
		HAWKER 950XP	
H25C	H25C	HAWKER 1000	
HA4T	HA4T	HAWKER 4000	
HDJT	HDJT	HONDAJET HA-420	
IL62	IL62	ILYUSHIN-62	
IL76	IL76	ILYUSHU-76	
IL86	IL86	ILYUSHIN-86	
IL96	IL96	ILYUSHIN-96	
J328	J328	328JET	
L101	L101	L-1011 TRISTAR	
L29A	L29A	L-1329 JETSTAR 6/8	Non-Group
L29B-2	L29B	L-1329 JETSTAR II	
L29B-731	L29B	L-1329 JETSTAR 731	
LJ23	LJ23	LEARJET 23	
LJ24	LJ24	LEARJET 24	
LJ25	LJ25	LEARJET 25	
LJ28	LJ28	LEARJET 28 LEARJET 29	
LJ31	LJ31	LEARJET 31	
LJ35-36	LJ35	LEARJET 35 LEARJET 36	
LJ40	LJ40	LEARJET 40	
LJ45	LJ45	LEARJET 45	
LJ55	LJ55	LEARJET 55	
LJ60	LJ60	LEARJET 60	
MD10	MD10	MD-10	
MD11	MD11	MD-11	
MD80	MD81 MD82 MD83 MD87 MD88	MD-80 MD-80 MD-80 MD-80 MD-80	
MD90	MD90	MD-90	
MU30	MU30	MU-300 DIAMOND	
P180	P180	P-180 AVANTI	
PAY3	PAY3	PIPER Cheyenne 3	Non-Group
PAY4	PAY4	PA-42 Cheyenne 400	Series: 1000 CHEYENNE
PC12	PC12	PC-12	
PRM1	PRM1	PREMIER 1	

Monitoring Group	A/C ICAO	Manufacturer Type	Additional Defining Criteria
R721	R721	B-727-100: Re-engined	Non-Group
R722	R722	B-727-200: Re-engined	Non-Group
SB20	SB20	SAAB 2000	
SBR1	SBR1	SABRELINER 40 SABRELINER 60 SABRELINER 65	
SBR2	SBR2	SABRELINER 80	
SJ30	SJ30	SWEARINGEN SJ-30	Non-Group
STAR	STAR	BEECH 2000 STARSHIP	Non-Group
SU95	SU95	SUKHOI SUPERJET 100-95	
T134	T134	TU-134	
T154	T154	TU-154	
T204	T204	TU-204 TU-214 TU-224 TU-234	
T334	T334	TU-334	
TBM	TBM7 TBM8	TBM-700 TBM-850	
WW24	WW24	1124 WESTWIND	
YK42	YK42	YAK-42	